Broadway 3D Security System

USER MANUAL

v.1.1.0

Artec Group, Inc. 2012

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1. General Information

The Broadway 3D (B3D) security system is designed for building highly reliable biometric stand-alone access control systems (ACS). B3D system reads biometric information about face shape, compares it with those biometric templates registered in the database, and makes the decision to issue control signals to actuators controlling access to premises (turnstiles, locks, gates, etc.), while simultaneously displaying information on the status of work on a monitor and LED indicators.

B3D system can also complement existing access control systems that are based on other identification technologies, in order to improve their reliability and functionality. In those cases, B3D system interacts with elements of the access control system - access control card readers and/or controllers having a Wiegand interface.

B3D system can operate in either identification or verification mode. The type of biometric template remains unchanged. Therefore, during operation of the system, at any time the system can be switched from one mode to the other. If several B3D systems work as an integrated solution, then some of them may operate in the mode of verification, and some in the mode of identification.

2. Delivery Package

B3D systems come in the packages described in Table 1.

Component	B3D version B	B3D version BM	B3D version BR
3D Camera	+	+	+
B3D Pole	+	+	o
Recognition Unit mounting set	+	+	o
Docking station	+	+	+
Computing Unit	+	+	+
VGA Extender	o	+	o
Monitor	o	+	o
Packaging	+	+	+
ASP software package	+	+	+
User Manual	+	+	+

Table 1. B3D packages

B3D Poles vary between B3D versions. Packaging may vary between B3D Versions. The rest components are the same for all B3D versions, if included.

3. Electrical Connection Diagram

3.1. B3D BR

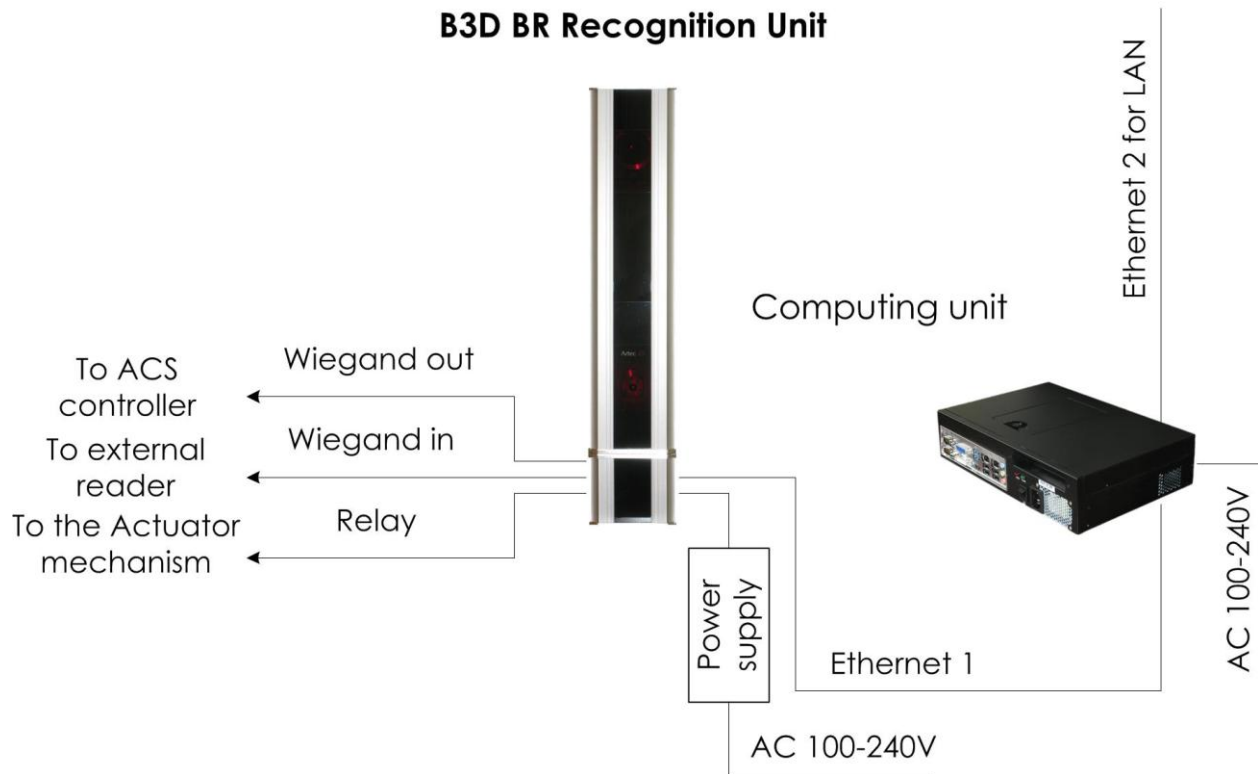Figure 1 illustrates basic electrical connection diagram of B3D BR system.

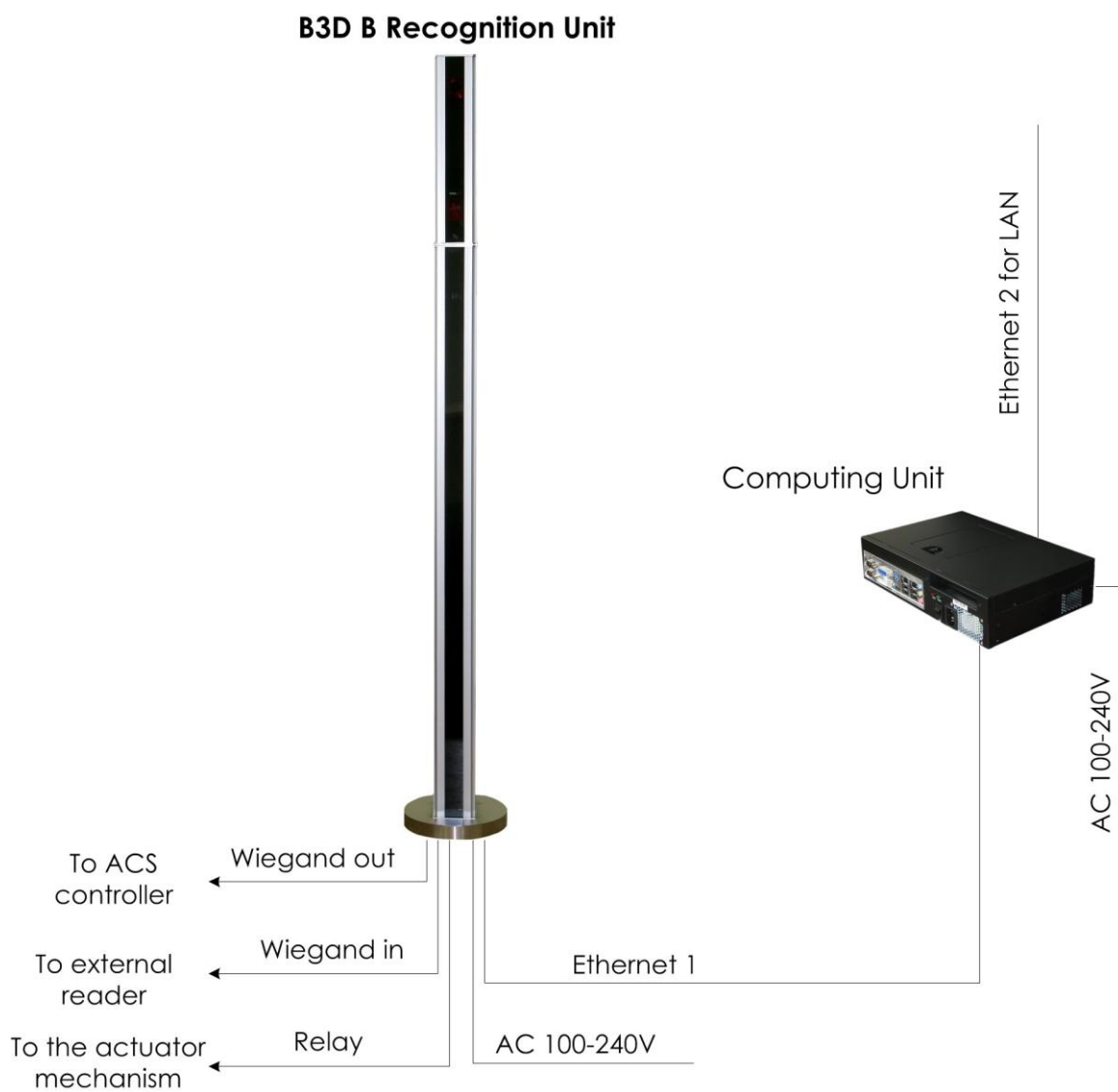FIG 1. B3D BR basic electrical connection diagram

3.2. B3D B

FIG 2. B3D B optional electrical connection diagram

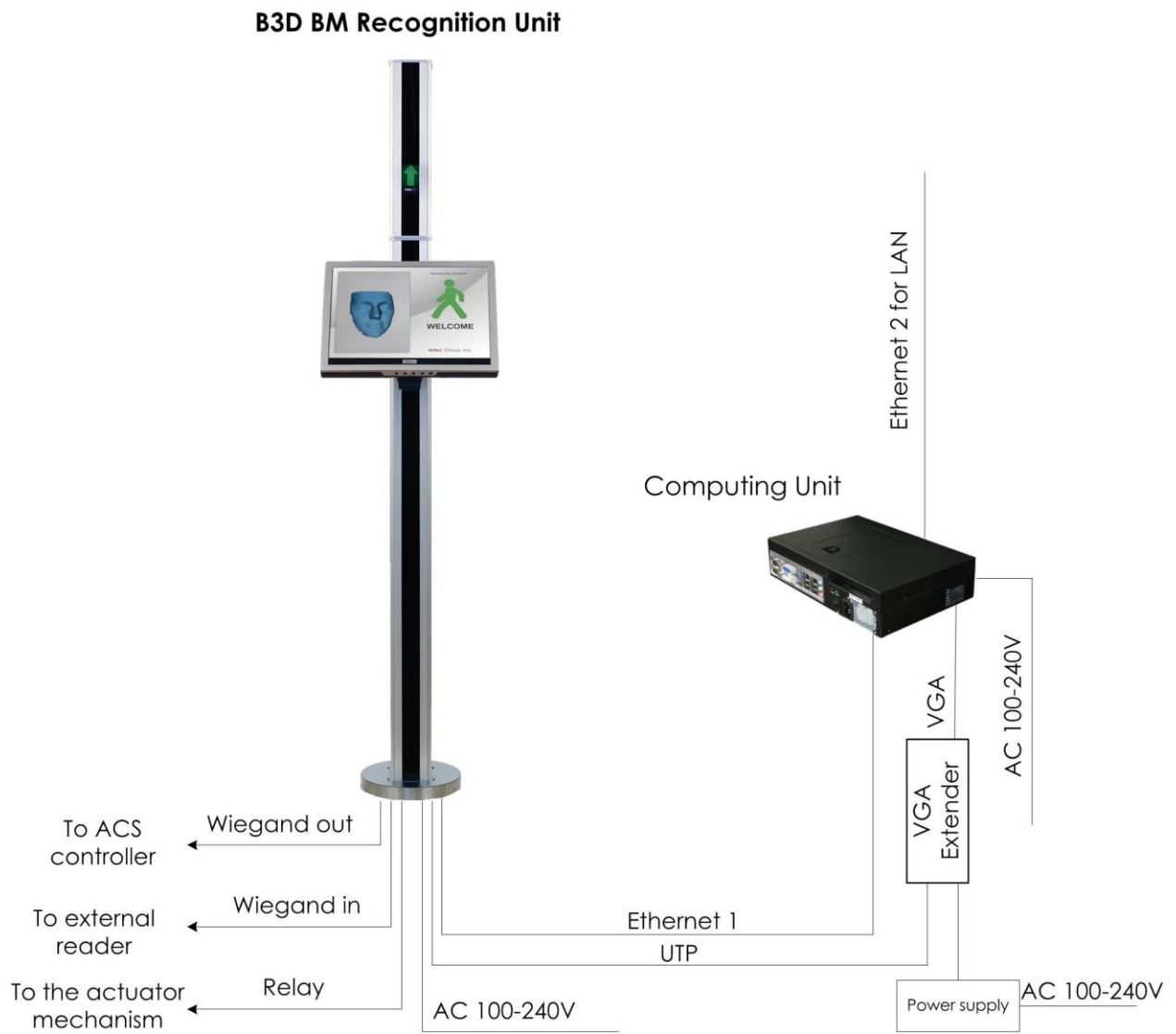## 3.3. B3D BM

B3D BM Recognition Unit

FIG 3. B3D BM optional electrical connection diagram

4. Integration with ACS

Figures 4 to 7 show typical scenarios of integration of B3D B/BM/BR with Access Control Systems.
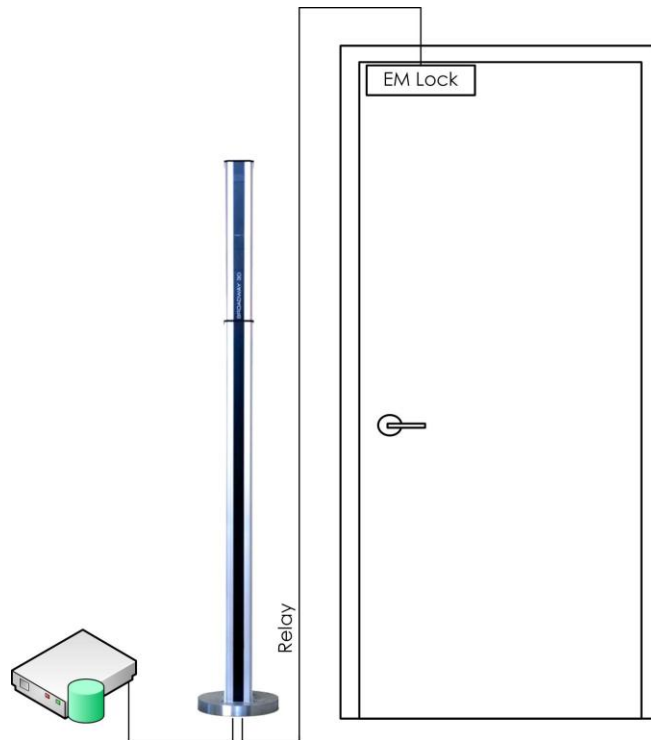

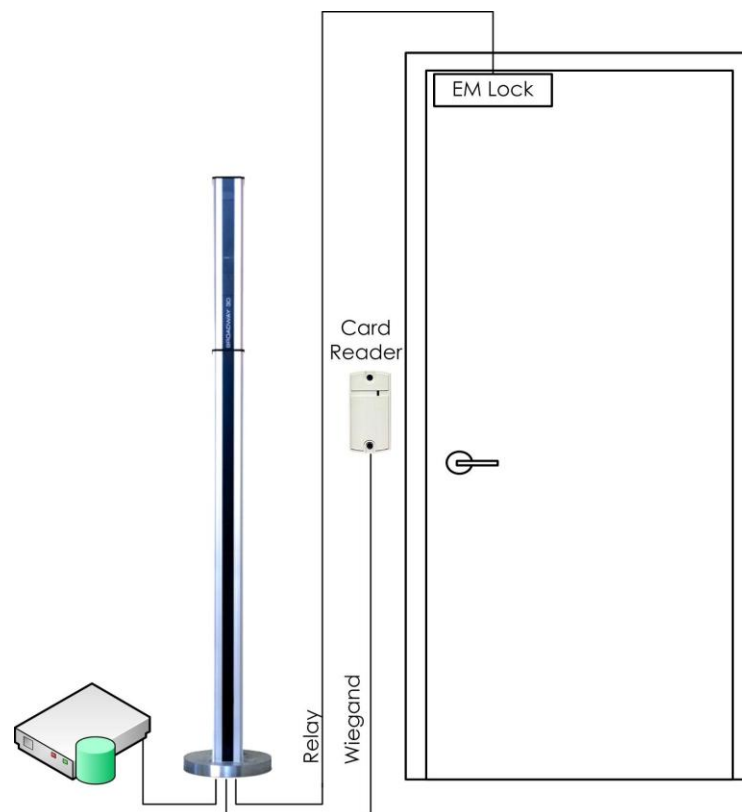FIG 4. Integration with an actuator

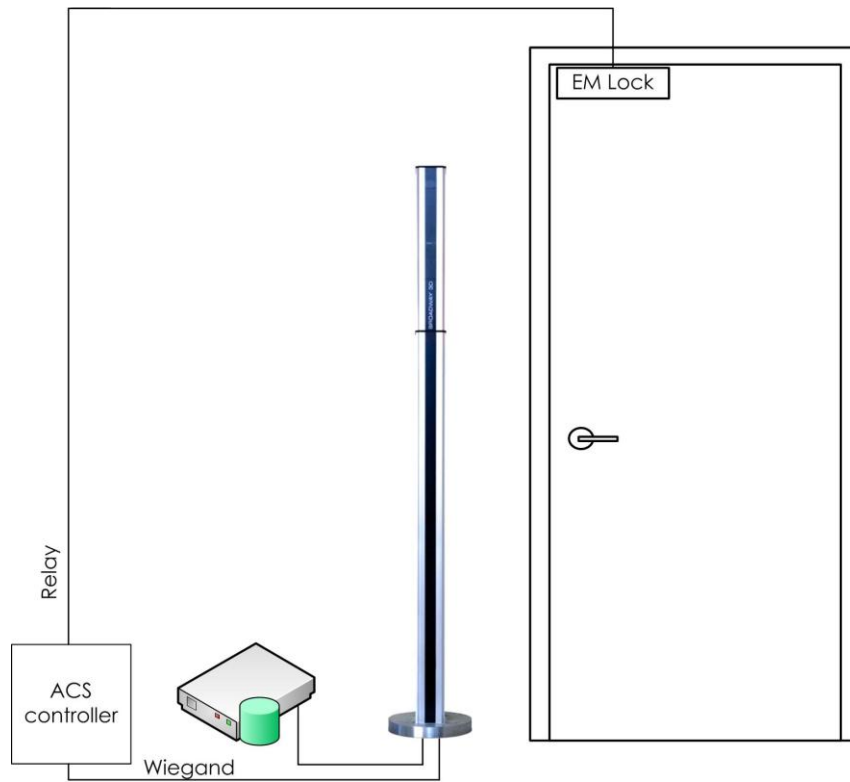FIG 5. Integration with an actuator and a card reader
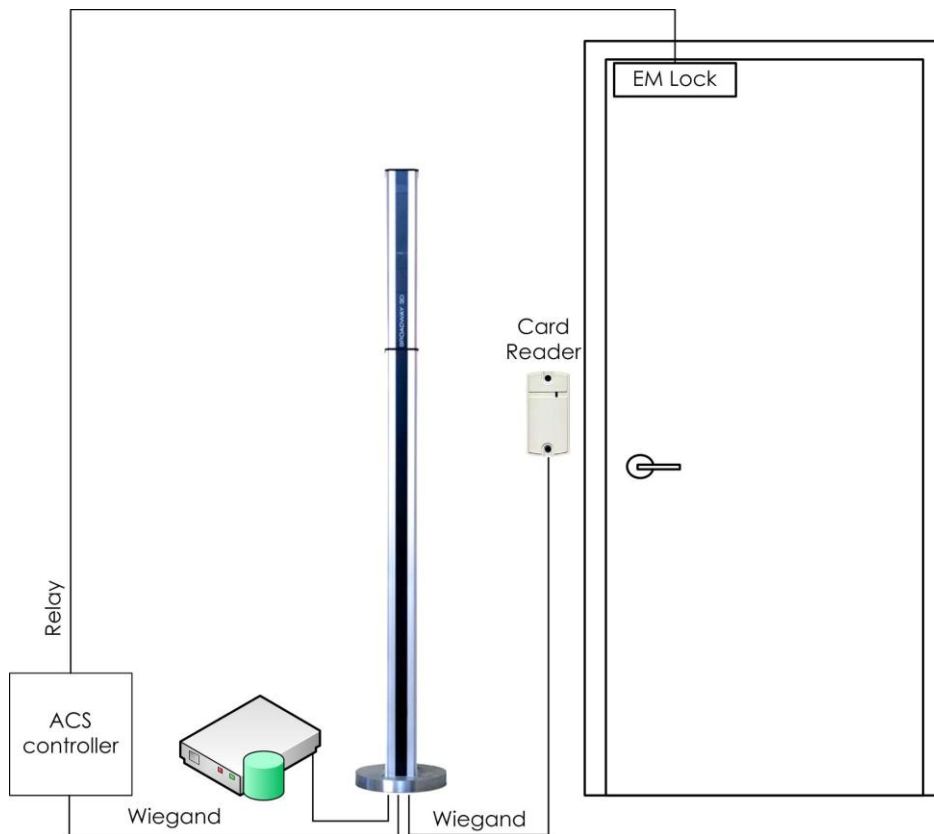
FIG 6. Integration with a door controller

FIG 7. Integration with a door controller and a card reader

5. HW Specifications

5.1. B3D BR Recognition Unit

5.1.1. Overview

B3D BR Recognition Unit is a part of B3D system that end users directly interact with. The Recognition Unit is always installed at point of access (e.g. doors and turnstiles) with exception of cases when it is used not for access control purposes but only as an enrollment station. The Recognition Unit captures 3D facial biometric of users, sends that data over Ethernet to the Computing Unit and provides interaction with third parties Access Control Systems components via embedded B3D controller. The Recognition Unit also provides users with visual feedback information about the B3D system and recognition process conditions with the LED indication.

B3D BR Recognition Unit is an OEM unit. It may be mechanically integrated in and mounted on a turnstile, wall, door, reception desk, tripod, and etc.

FIG 8. B3D BR Recognition Unit

5.1.2. B3D BR Recognition Unit package

B3D BR Recognition Unit package includes:

- 3D Camera
- Docking station
- Ethernet patch-cord
- Power supply
- Power cord

B3D BR Recognition Unit comes without any mounting set. Its mounting method depends on particular integration and/or installation conditions. Mounting set for specific conditions may be designed and delivered by the manufacturer upon order.

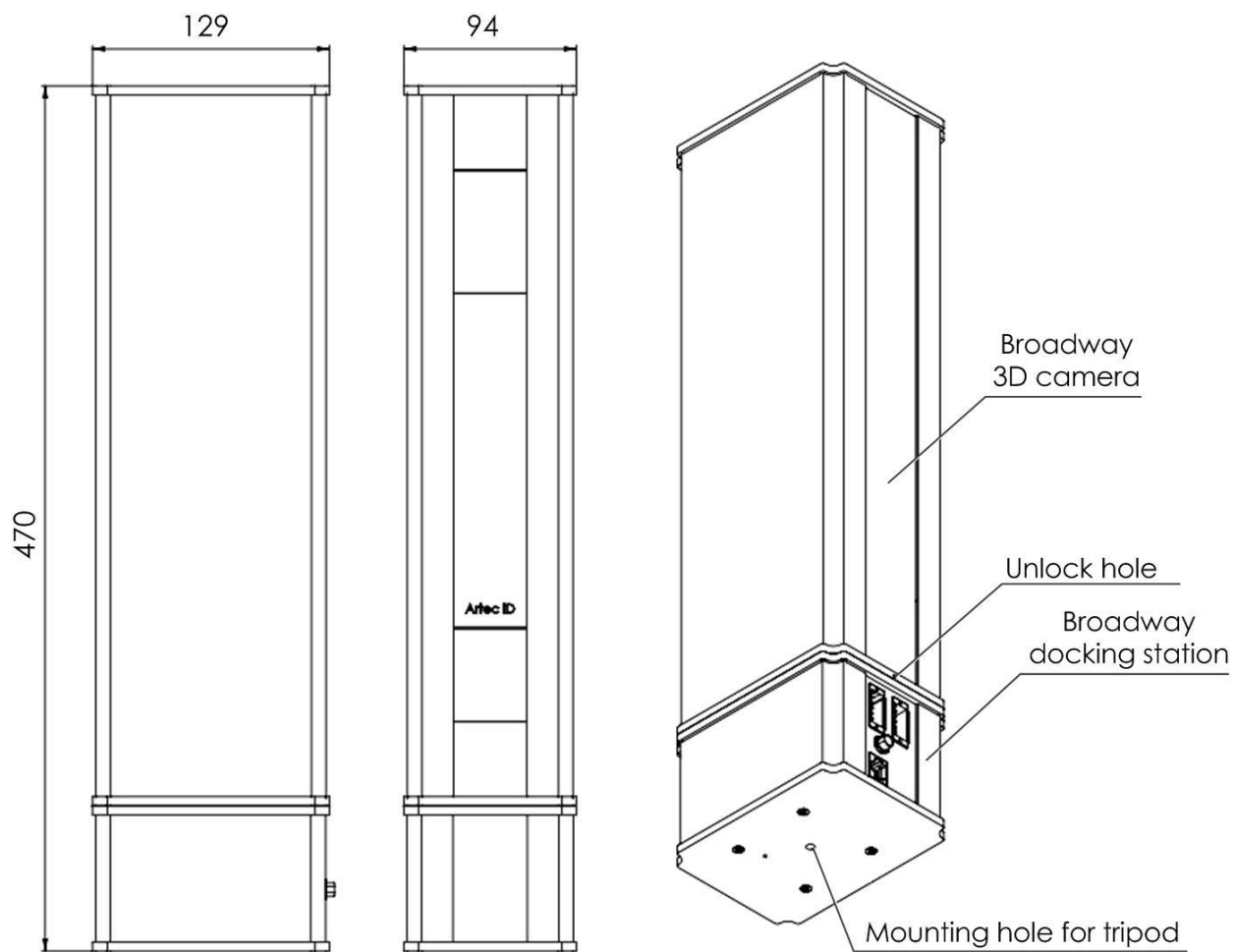### 5.1.3. B3D BR Recognition Unit general drawing

FIG 9. B3D BR Recognition Unit general drawing
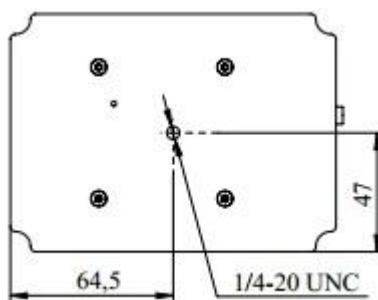

FIG 10. B3D BR Recognition Unit general drawing bottom view

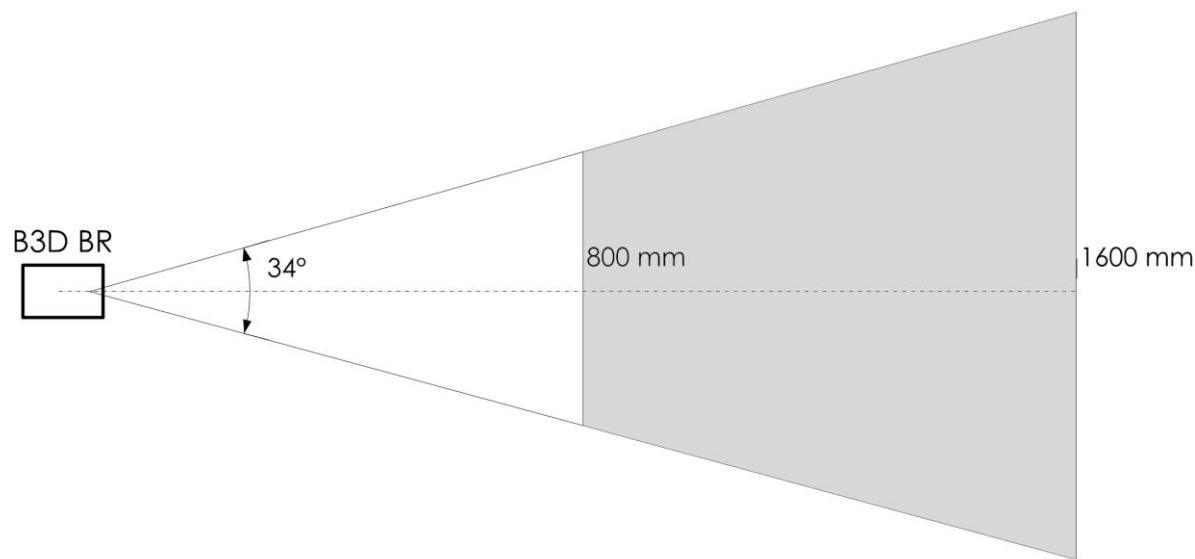### 5.1.4. B3D BR Recognition Unit field-of-view

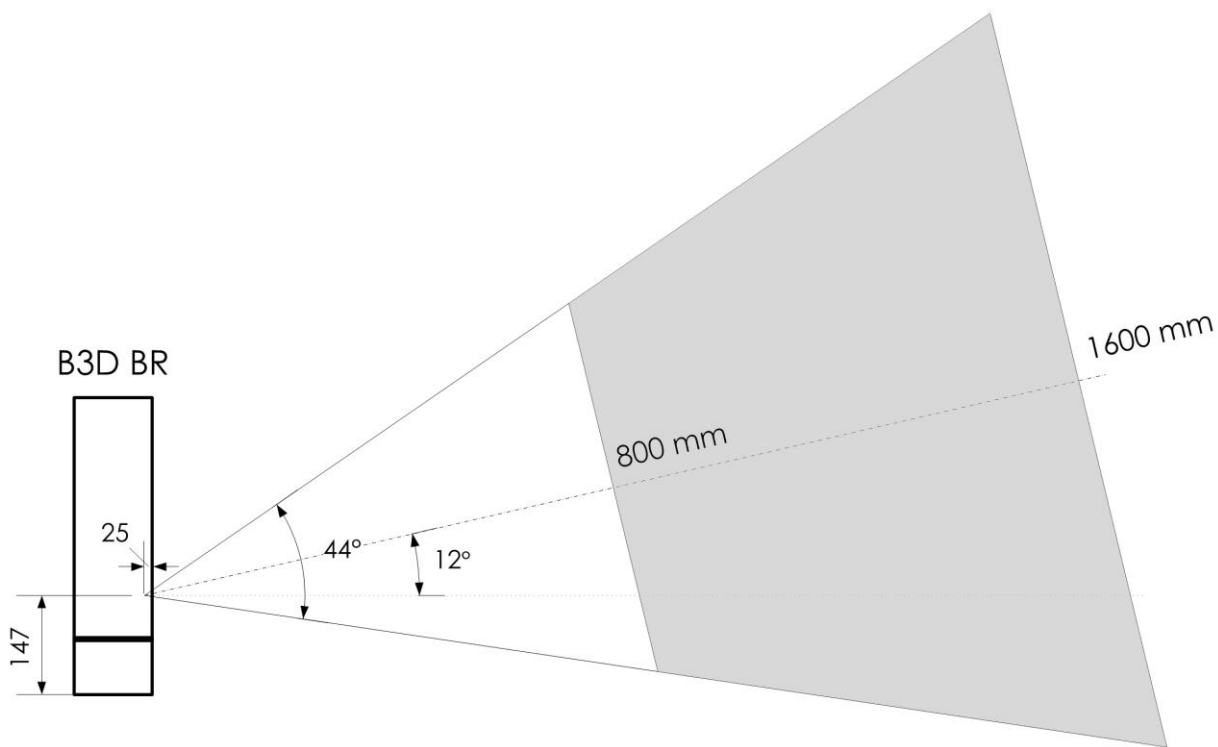FIG 11. B3D BR Recognition Unit's horizontal field-of-view

FIG 12. B3D BR Recognition Unit vertical field-of-view

5.1.5. B3D BR Recognition Unit electrical connections
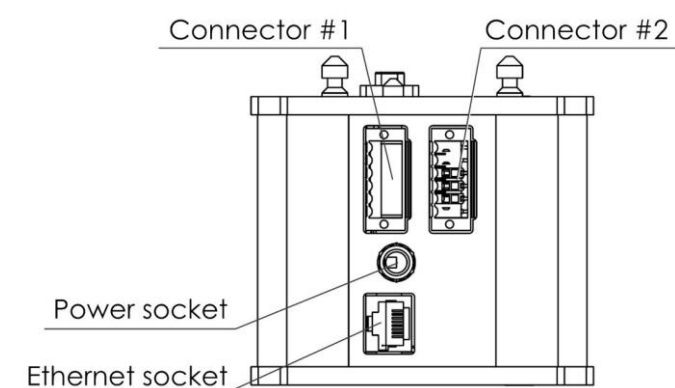
FIG 13. B3D BR Docking station connections

B3D BR Recognition Unit connectors:

- Power socket   Switchcraft L722RA
- Ethernet socket   RJ-45 jack
- Connector #1 #2   Weidmuller 1045390000

Counterpart connectors:

- Power plug   Switchcraft S761K
- Ethernet plug   TP-8P8C plug
- Connector #1 #2   Weidmuller 1748520000

Details and specifications of Connector #1 and #2 are described in Chapter 5.6.

5.1.6. B3D BR Recognition Unit's characteristics

Parameter	Value
Interface	Ethernet, Wiegand, Relay
Ethernet line distance, up to	90 meters
Working distance	0,8 – 1,6 m
Linear field of view, HxW @ closest range	646x490 mm
Linear field of view, HxW @ furthest range	1292x980 mm
Angular field of view, HxW	44x34^0
Light source	Flash bulb (no laser)
Video frame rate, up to	15 fps
Exposure time	0,2 ms
Dimensions, HxDxW	470x129x94 mm
Weight	3,5 kg
Power consumption	100-240 VAC @ 60 W
Operating temperature	15 – 30 ^{0}C
Operating humidity	15% - 80% non-condensing

Table 2. B3D BR Recognition Unit's characteristics

5.2. B3D B Recognition Unit

5.2.1. Overview

B3D B Recognition Unit is a part of B3D system that end users directly interact with. The Recognition Unit is always installed at point of access (e.g. turnstiles) with exception of cases when it is used not for access control purposes but only as an enrollment station. The Recognition Unit captures 3D facial biometric of users, sends that data over Ethernet to the Computing Unit and provides interaction with third parties Access Control Systems components via embedded B3D controller. The Recognition Unit also provides users with visual feedback information about the B3D system and recognition process conditions with the LED indication.

B3D B Recognition Unit is meant to be mounted on the floor.

FIG 14. B3D B Recognition Unit

5.2.2. B3D B Recognition Unit package

B3D B Recognition Unit package includes:

- 3D Camera
- B3D B Pole
- Ethernet patch-cord
- Power supply

The following description applies B3D B Recognition Unit as an assembly.

5.2.3. B3D B Recognition Unit general drawing

FIG 15. B3D B Recognition Unit general drawing

5.2.4. B3D B Recognition Unit field-of-view

FIG 16. B3D BR Recognition Unit's horizontal field-of-view
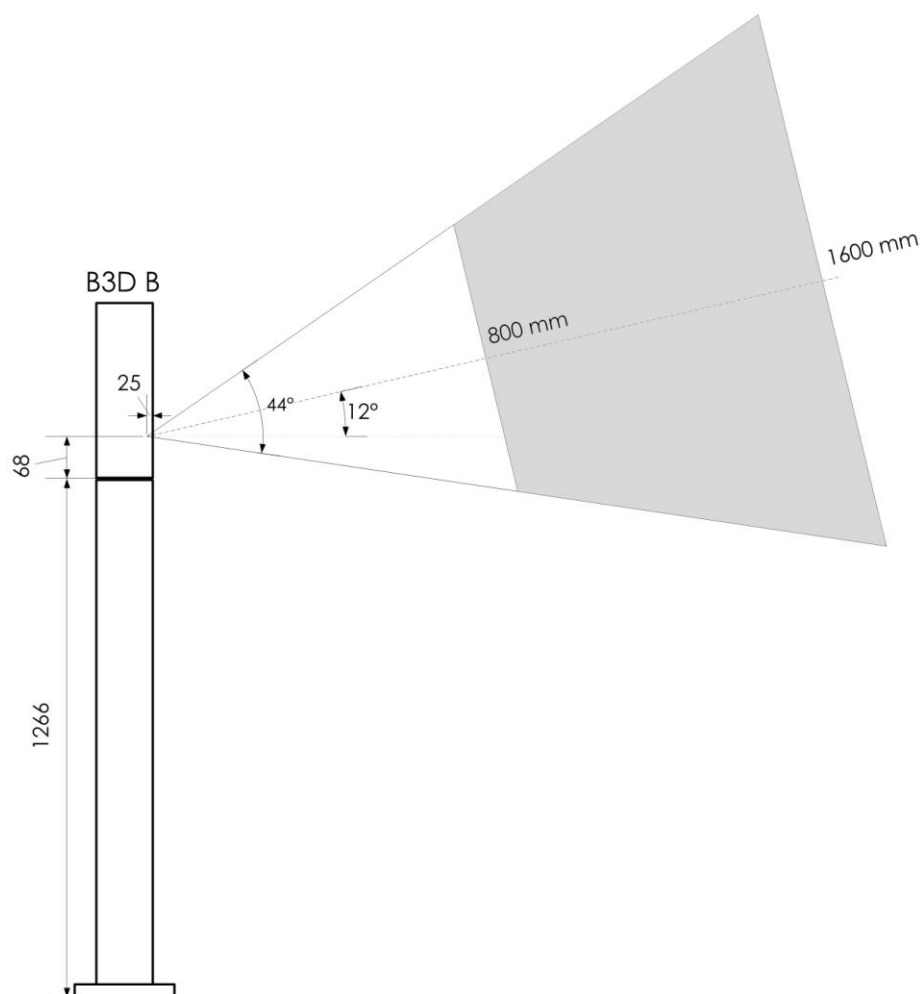
FIG 17. B3D B Recognition Unit vertical field-of-view
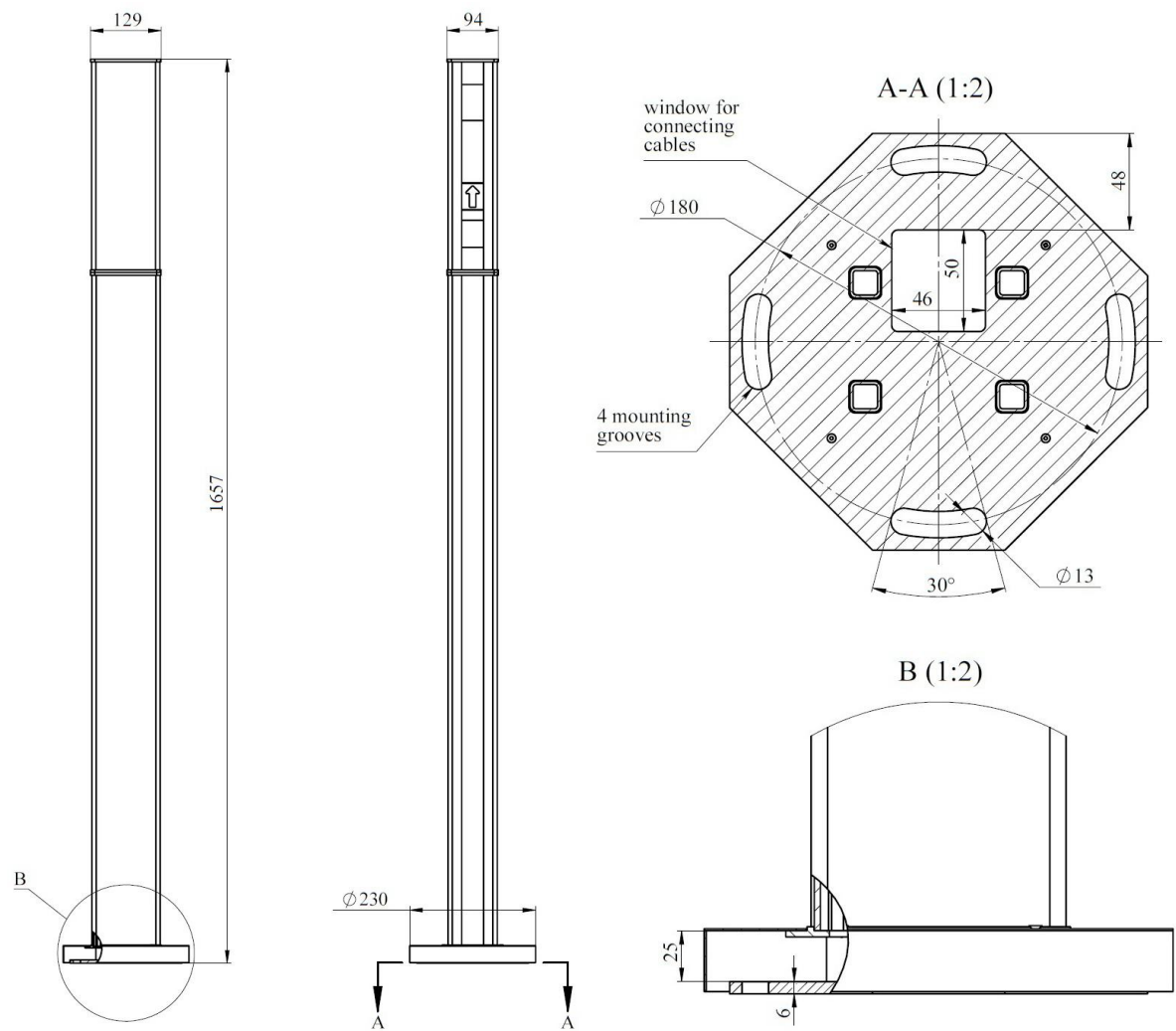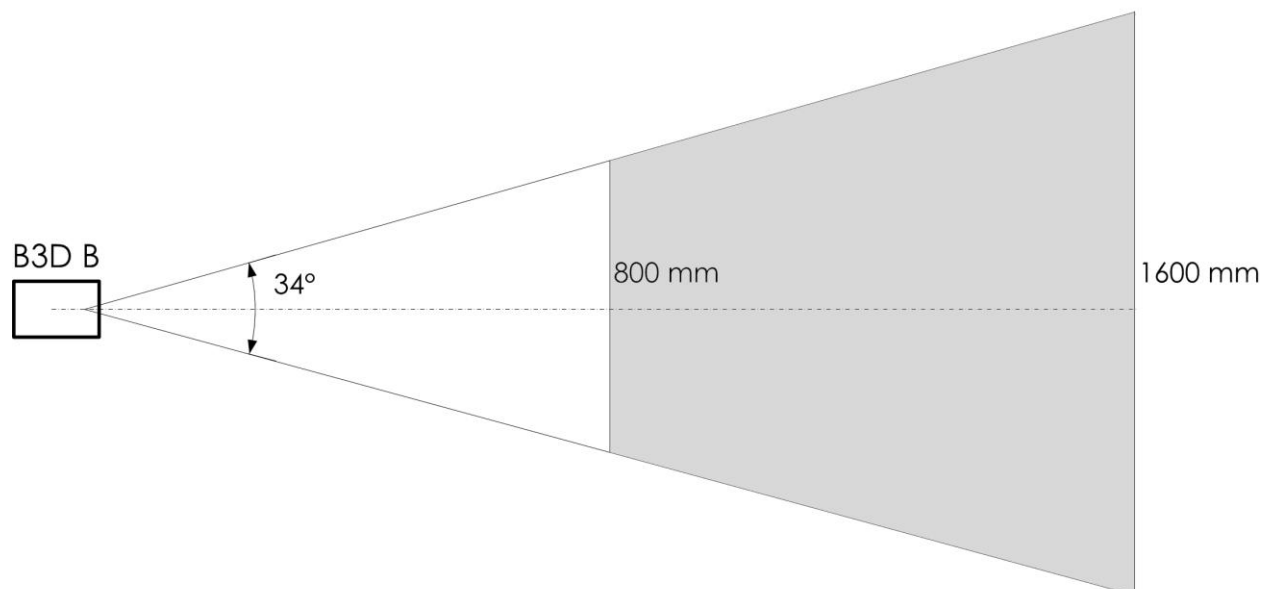
5.2.5. B3D B Recognition Unit electrical connections

B3D B has one 3D Camera and three power supply connectors. Connectors are located inside the lower part of the B3D B Pole. The connectors are accessible through a window located on the lower back part of the B3D Pole. Each power supply connector is dedicated to one electrical line - null, phase and ground.
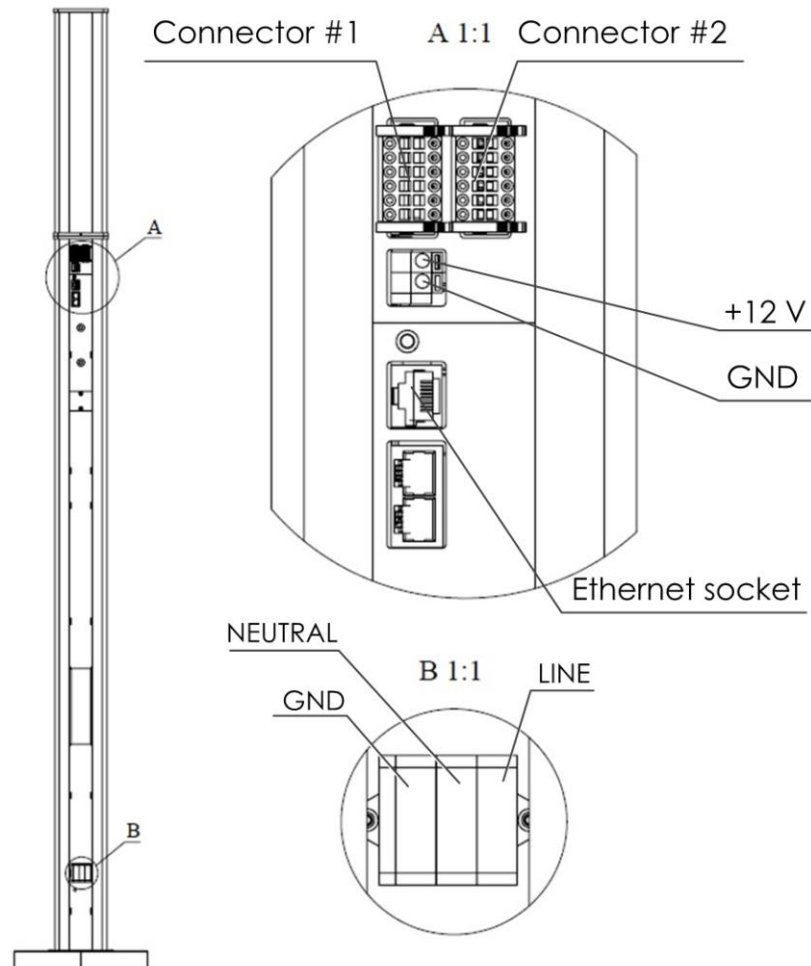
FIG 18. B3D B Recognition Unit connections

B3D B Recognition Unit connectors:

- Power terminal 12V   Phoenix Contact FFKDS/H1
- Power terminal 100-220V   WAGO-264
- Ethernet socket   RJ-45 jack
- Connector #1 #2   Weidmuller 1045390000

Counterpart connectors:

- Power cable 12V   AWG 22 - 16
- Power cable 100-220V   AWG 28 - 12
- Ethernet plug   TP-8P8C plug
- Connector #1 #2   Weidmuller 1748520000

Details and specifications of Connector #1 and #2 are described in Chapter 5.6.

5.2.6. B3D B Recognition Unit characteristics

Parameter	Value
Interface	Ethernet, Wiegand, Relay
Ethernet line distance, up to	90 meters
Working distance	0,8 – 1,6 m
Linear field of view, HxW @ closest range	646x490 mm
Linear field of view, HxW @ furthest range	1292x980 mm
Angular field of view, HxW	44x34^0
Light source	Flash bulb (no laser)
Video frame rate, up to	15 fps
Exposure time	0,2 ms
Dimensions, HxDxW	1657x230x230 mm
Weight	17 kg
Power consumption	100-240 VAC @ 60 W
Operating temperature	15 – 30 ^{0}C
Operating humidity	15% - 80% non-condensing

Table 3. B3D B Recognition Unit's characteristics

5.3. B3D BM Recognition Unit

5.3.1. Overview

B3D BM Recognition Unit is a part of B3D system that end users directly interact with. The Recognition Unit is always installed at point of access (e.g. turnstiles) with exception of cases when it is used not for access control purposes but only as an enrollment station. The Recognition Unit captures 3D facial biometric of users, sends that data over Ethernet to the Computing Unit and provides interaction with third parties Access Control Systems components via embedded B3D controller. The Recognition Unit also provides users with visual feedback information about the B3D system and recognition process conditions with the LED indication and the monitor.

B3D BM Recognition Unit is meant to be mounted on the floor.

FIG 19. B3D BM Recognition Unit

5.3.2. B3D BM Recognition Unit package

Broadway 3D BM Recognition Unit package includes:

- 3D Camera
- B3D BM Pole
- Monitor
- Ethernet patch-cord
- Power supply
- VGA Extender

The following description applies B3D BM Recognition Unit as an assembly.

5.3.3. B3D BM Recognition Unit package general drawing
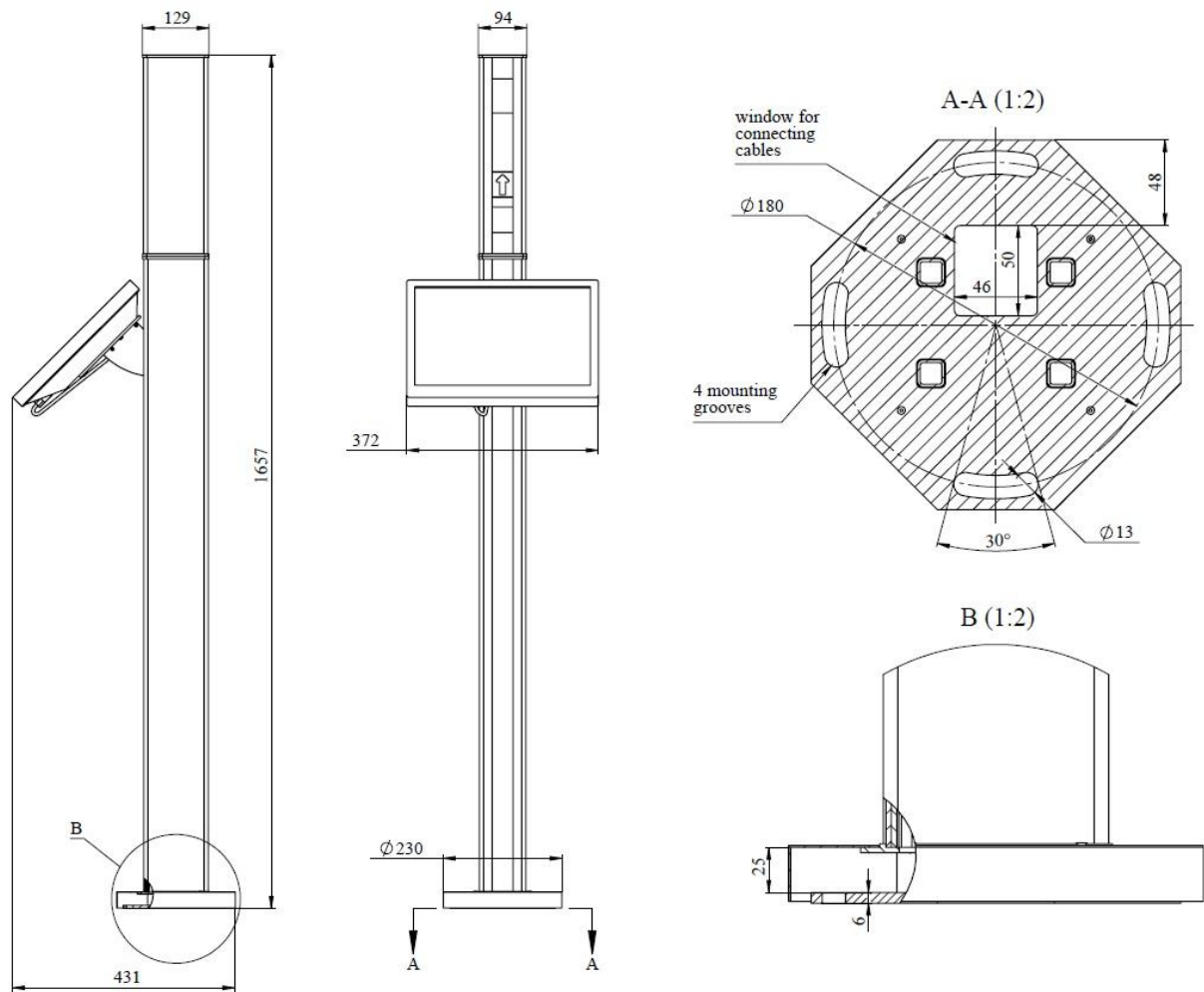
FIG 20. B3D BM Recognition Unit general drawing

5.3.4. B3D BM Recognition Unit field-of-view
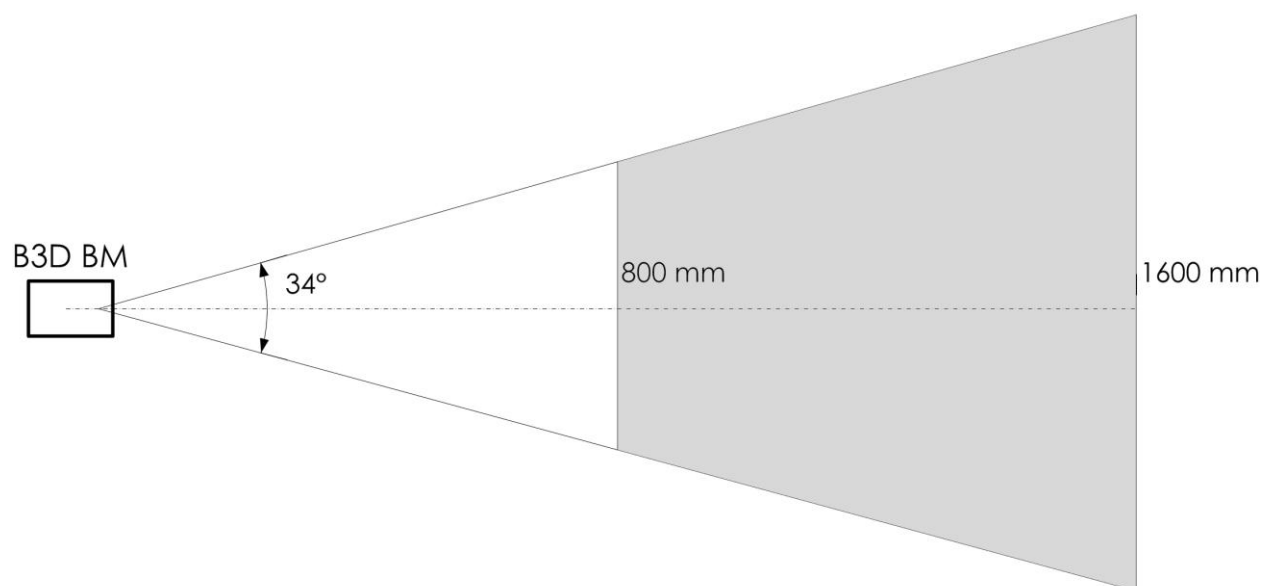
FIG 21. B3D BM Recognition Unit's horizontal field-of-view
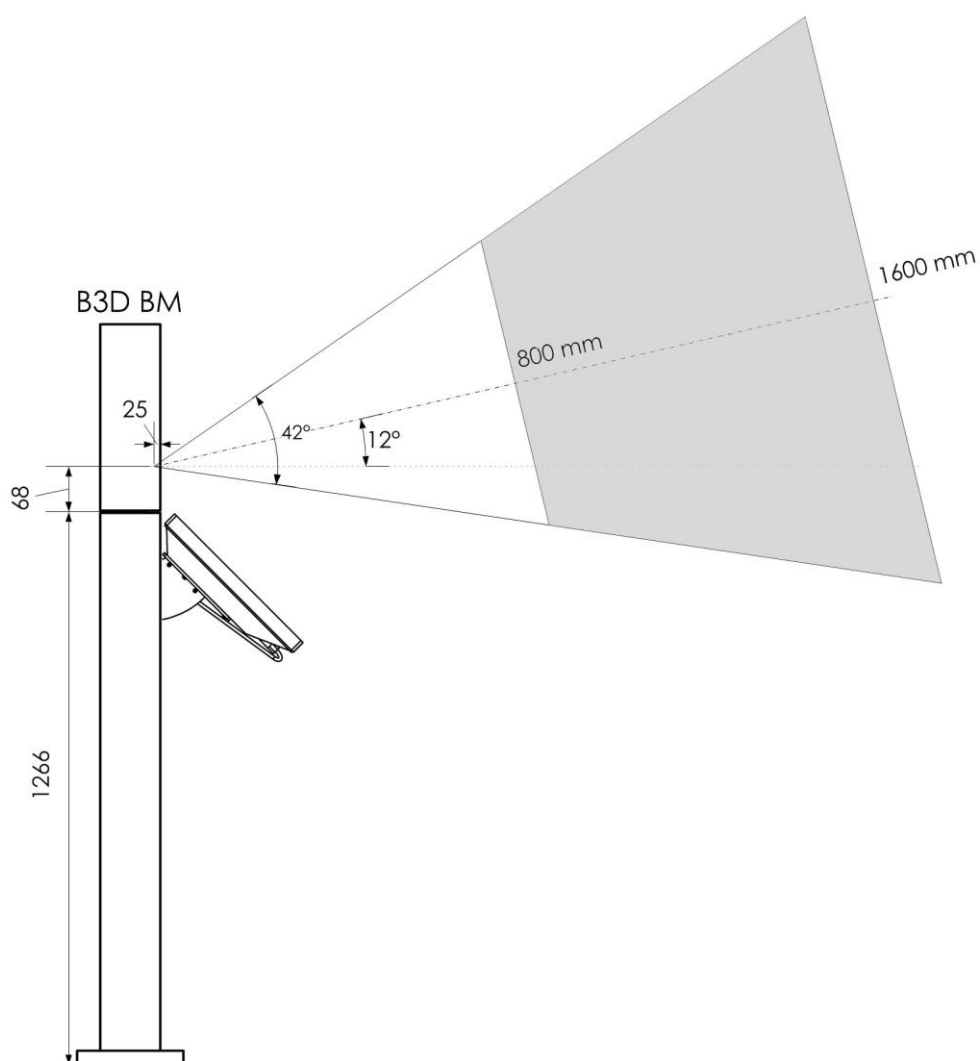
FIG 22. B3D BM Recognition Unit vertical field-of-view

5.3.5. B3D BM Recognition Unit electrical connections
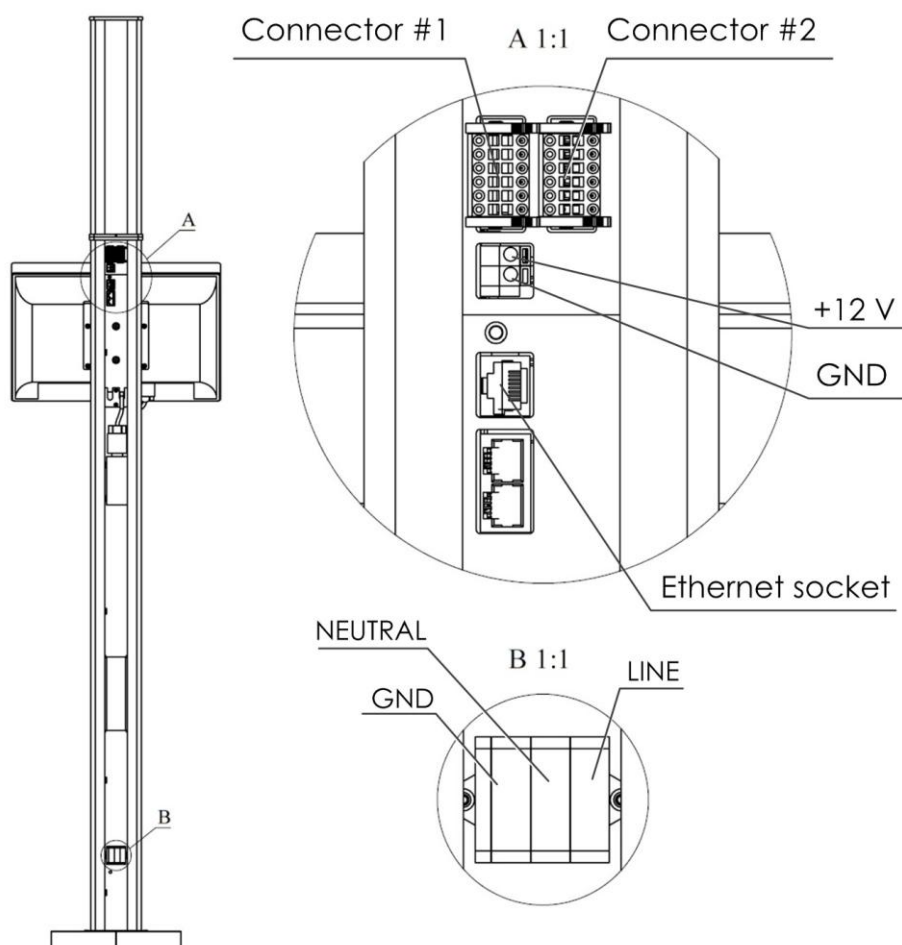
FIG 23. B3D BM Recognition Unit electrical connections

B3D BM Recognition Unit connectors:

- Power terminal 12V   Phoenix Contact FFKDS/H1
- Power terminal 100-220V   WAGO-264
- Ethernet socket   RJ-45 jack
- VGA Extender socket   RJ-45 jack
- Connector #1 #2   Weidmuller 1045390000

Counterpart connectors:

- Power cable 12V   AWG 22 - 16
- Power cable 100-220V   AWG 28 - 12
- Ethernet plug   TP-8P8C plug
- VGA Extender plug   TP-8P8C plug
- Connector #1 #2   Weidmuller 1748520000

Details and specifications of Connector #1 and #2 are described in Chapter 5.6.

5.3.6. B3D BM Recognition Unit characteristics

Parameter	Value
Interface	Ethernet, Wiegand, Relay
Ethernet line distance, up to	90 meters
Working distance	0,8 – 1,6 m
Linear field of view, HxW @ closest range	646x490 mm
Linear field of view, HxW @ furthest range	1292x980 mm
Angular field of view, HxW	44x34^{0}
Light source	Flash bulb (no laser)
Video frame rate, up to	15 fps
Exposure time	0,2 ms
Dimensions, HxDxW	1657x372x431 mm
Weight,	19 kg
Power consumption	100-240 VAC @ 100 W
Operating temperature	15 – 30 ^{0}C
Operating humidity	15% - 80% non-condensing

Table 4. B3D BM Recognition Unit characteristics

5.4. Recognition Unit mounting set

1		**Bolt** DIN 933 M8x30 mm. Quantity: 4
2		**Metal anchor** DRM d M8x10x30 mm. Quantity: 4
3		**Hex screw** ST8x38 DIN 7976 Quantity: 4
4		**Plastic dowel anchor** 8x40 mm Quantity: 4
5		**Washer** M8 DIN 9021 Quantity: 4

Table 5. Recognition Unit mounting set

Notes:

i. Various combinations of the mounting accessories listed in the Table 5 may be used depending on particular installation cases:
   a. (1)+(2)+(5) – installation on stone/brick
   b. (3)+(4)+(5) – installation on concrete
   c. (3)+(5) – installation on wood
ii. This mounting is applicable for B3D B and B3D BM Recognition Units only

5.5. Computing Unit

5.5.1 Overview

Computing Unit of B3D system performs the following key functions:

- B3D Recognition Unit operation
- B3D System users recognition or verification (depending on system operation mode)
- Database storage and management
- Users' attempts statistics collection

Computing Unit is set up and administrated via Ethernet interface. Computing Unit comes with pre-installed Broadway Embedded Operation System (BEOS), Broadway Security Software (BSS) and Broadway Web Interface (BWI).

FIG 24. Computing Unit

5.5.2. Computing Unit package

Computing unit package includes:

- Computing Unit
- Power cord
- Computing Unit packing

5.5.3. Computing Unit electrical connections

Computing Unit's connections employed in B3D system are shown on FIG 27 and described in Table 6.
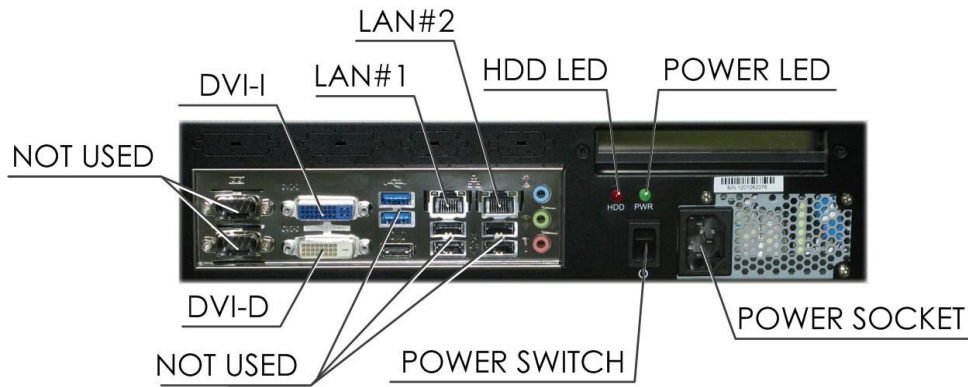
FIG 25. Computing Unit electrical connections

#	Name	Description
1	DVI-I[1]	Analog DVI-I connector is used to connect Computing Unit to: • VGA extender via DVI-VGA converter and VGA cable, which comes as a part of VGA extender package (in case of B3D BW system) • Optional third party monitor, if needed (in case of B3D B and B3D BR systems)
2	DVI-D[1]	Digital DVI-D connector is used to connect Computing Unit to Optional third party monitor, if needed (in case of B3D B and B3D BR systems)
3	LAN#1	Connector is used to connect Computing Unit to:B3D BR, B3D B or B3D BM Recognition Unit via Ethernet cable (cable length is up to 90 meters)
4	LAN#2	Connector is used to connect Computing Unit to an Ethernet network to set up and administrate the Computing Unit through
5	Speakers	Connectors may be used to connect third party speakers to provide users with optional audio feedback
6	Power socket	Connector is used to connect Computing Unit to a standard 100-240 V power line via power cord, which comes as a part of Computing Unit package
7	Switch	Switch is used to switch Computing Unit on and off
	Power Led	Indicates CU's power state
	Hdd Led	Indicates HDD activity

Table 6. Computing Unit electrical connections

5.5.4. Computing Unit characteristics

Table 7 below reflects Computing Unit's characteristic.

Parameter	Value
Interfaces	Ethernet, DVI-I, DVI-D
Embedded software platform	Linux
Dimensions, HxDxW	300x205x72 mm
Weight	2 kg
Power consumption	115/230 VAC @ 180 W
Operating temperature	15 – 30 ^{0}C
Operating humidity	15% - 80% non-condensing

Table 7. Computing Unit characteristics

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[1] DVI-I and DVI-D can be used separately or simultaneously.

5.6. B3D Controller

5.6.1. Overview

B3D controller is an implemented B3D system component intended for hardware integration of B3D system with elements of other Access Control Systems. B3D controller can provide communication with the following components of Access Control Systems:

- Card readers (proximity-readers, smart-card readers, magnetic card readers, barcode readers, and etc.) via Wiegand in interface of up to 64 bit
- Door controllers via Wiegand out interface of up to 64 bit
- Actuating mechanism (electro-mechanical or magnetic lock, turnstile, gate, barrier, and etc.) via dry out contact
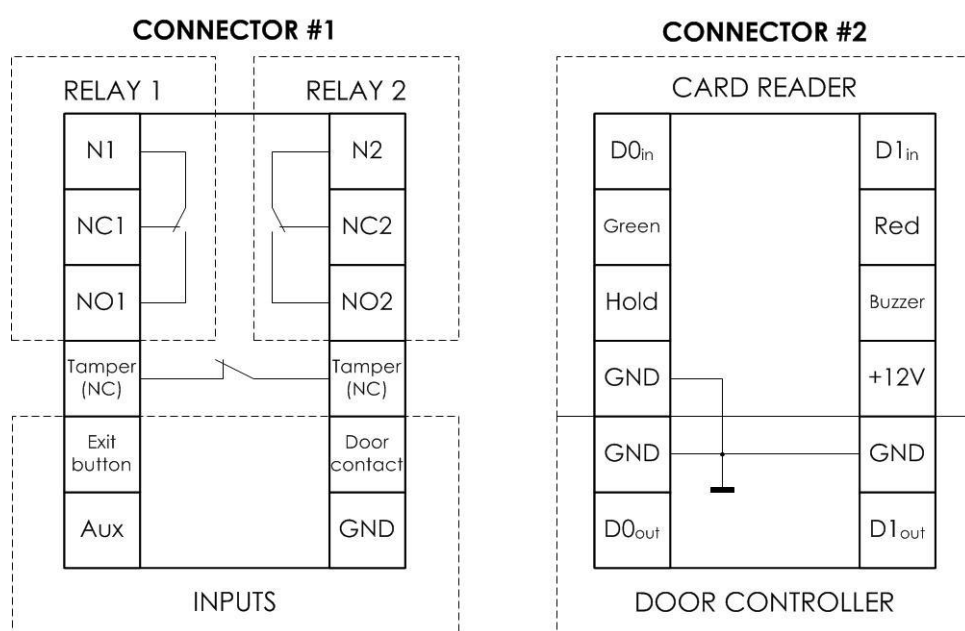

FIG 26. B3D Controller's connectors layout.

LEFT CONNECTOR		RIGHT CONNECTOR	
Pinout	Description	Pinout	Description
N1	Relay 1 output (common)	$D0_{in}$	D0 of the Card reader
NC1	Relay 1 Normal Closed	Green*	To "Green" contact of the Card reader
NO1	Relay 1 Normal Opened	Hold*	To "Hold" contact of the Card reader
Tamper	NC output, opens when 3D camera is being unattached.	GND	Ground
Exit button	Switches relay when closing to GND	GND	Ground
Auxiliary*	Reserved	$D0_{out}$	D0 of the Door controller
N2*	Relay 2 output (common)	$D1_{in}$	D1 of the Card reader
NC2*	Relay 2 Normal Closed	Red*	To "Red" contact of the Card reader
NO2*	Relay 2 Normal Opened	Buzzer*	To "Buzzer" contact of the Card reader

Tamper	NC output, opens when 3D camera is being unattached.	+12V	12V output for the Card reader
Door contact*	Used to control weather the door is closed or not	GND	Ground
GND	Ground	$D1_{out}$	D1 of the Door controller

Note: pins marked by "*" are reserved for using in next version of B3D controller

Table 8. B3D controller connectors description.

5.6.2. B3D Controller characteristics

Parameter	Value
User Interface	Wiegand input/output, Relay
Administration Interface	Ethernet
Operating temperature	$15 - 30\ ^0C$
Operating humidity	15% - 80% non-condensing

Table 9. B3D Controller characteristics

5.7. VGA Extenders

5.7.1. Overview

FIG 27. VGA Extenders

5.7.2. VGA Extender package

VGA extender package includes:

- VGA extender
- Power supply
- VGA cable
- DVI-VGA converter
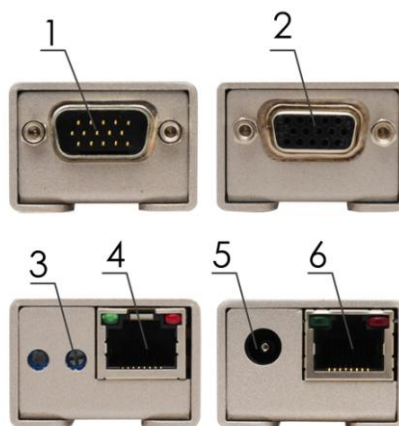
5.7.3. VGA Extender electrical connections

FIG 28. VGA Extender electrical connections

#	Name	Description
1	VGA Input	Connect the B3D Computing Unit to this input
2	VGA Output	Connect the VGA display to this output port using VGA connector inside B3D BM pole
3	Brightness Trim Pot Control	Adjusting this control will brighten or dim the output video.
4	Receiver RJ-45 Input	Connect a CAT-5e cable (terminated according to the TIA/EIA-568-B specification) between the sending and receiving units
5	5V DC Power Supply Input	Connect the included 5V DC power supply to this input.
6	Sender RJ-45 Input	Connect a CAT-5e cable (terminated according to the TIA/EIA-568-B specification) between the sending and receiving units.

Table 10. VGA Extender's electrical connections

5.7.4. VGA Extender characteristics

Parameter	Value
Ethernet line distance, up to	100 m
Signalling rate	480 Mbit/s
Dimensions, HxDxW	93x46x35
Weight	0.15 kg
Power consumption	5 VDC @ 5 W
Operating temperature	$15 - 30\ ^{0}C$
Operating humidity	15% - 80% non-condensing

Table 11. VGA Extender characteristics

5.7.5. DVI-VGA converter

DVI-VGA converter should be installed in the Computing Unit DVI-I port in order to provide connection of Extender's VGA cable.

FIG 29. DVI-VGA converter

6. Mechanical Installation

6.1. B3D BR

6.1.1. Recognition Unit set up

B3D BR Recognition Unit package includes 3D Camera, Docking station, Ethernet cable, Power supply and Power cord. B3D BR Recognition Unit comes without any mounting set. Its mounting method depends on particular integration and/or installation conditions. Mounting set for specific conditions may be designed and delivered by the manufacturer upon order.

In case of temporary or demo installations, B3D Recognition Unit can be installed on a tripod or a flat surface (e.g. table).

Please note that Recognition Unit should not be powered on during any described procedure.

FIG 30. B3D BR Recognition Unit on a tripod

The tripod should comply with the following requirements:

- The tripod should have standard 1/4-20 UNC screw thread for attaching B3D Recognition Unit
- The tripod should be able to carry on B3D BR Recognition Unit's weight of 3,5 kg
- The tripod should be able to hold B3D Recognition Unit at 1133 mm height

6.1.2. Electrical Connections

B3D BR electrical connections should be perform according to B3D BR electrical connection diagram shown on Figure 1.

B3D BR electrical connection should be performed in the following sequence:

- Connect B3D BR Recognition Unit to Computing Unit using UTP cat.5 cable (or Ethernet patch-cord that comes as a part of Recognition Unit package),
- Connect Recognition Unit's power supply to the Recognition Unit,
- Connect Recognition Unit's power cord to the Recognition Unit's power supply,
- Connect Computing Unit's power cord to Computing Unit,
- Connect Computing Unit to LAN with a UTP cat.5 cable.

6.1.3. Connection with Access Control Systems

B3D BR electrical connections with third part equipment (Access control System's controllers, card readers, turnstiles, etc.) are described in article 6.4.

6.1.4. Recognition Unit assembly

Assembly steps:

- Carefully put 3D Camera on the top of the Docking station so the five pins on the top of the Docking station go inside the five fixing holes on the bottom of 3D Camera (FIG 31).
- Slightly press on top of the 3D Camera until the "click" sound is heard (it means that the inner lock has been safely closed).
- Check out that 3D Camera is fixed and cannot be moved up from the Docking station.

FIG 31. B3D BR Recognition Unit assembly.

In case of necessity to disassemble B3D BR Recognition Unit, follow instructions below. Please note that Recognition Unit should not be powered on during disassembly.

Disassembly steps:

- Insert small screwdriver (diameter is not more than 1,8 mm) in the round hole on the back of Recognition Unit and slightly press it until the "click" sound is heard that means that the lock is unclosed (FIG 32).
- Carefully lift the 3D Camera up.

FIG 32. 3D camera disassemble.

6.2. B3D B

B3D B Recognition Unit package includes 3D Camera and B3D B Pole. Recognition Unit should be assembled as follows. Please note that Recognition Unit should not be powered on during assembly.

6.2.1. Pole set up

The B3D B Recognition Unit is meant to be installed on the floor. There are no special requirements of the floor material, however, it should provide fixture strong enough to avoid Recognition Unit's wobbling, rocking and collapsing. Please note that Recognition Unit should not be powered on during any described procedure.

B3D B Pole's installation procedure:

- Lift and remove two plastic covers from the back of the Pole (FIG 33)
- Unfasten metal round cover on the bottom of the Pole and take the cover up and off (FIG 34)
- Provide the following cables at the very center of further Recognition Unit's installation place: three power cables (phase, null and grounding, AWG 28-12), one signal cable (UTP cat. 5) and necessary number of wires enough to provide connection to the third part equipment according to the predefined user installation scheme.
- Run prepared cables inside the Pole as shown on FIG 35.
- Mount the Pole at the floor level with Recognition Unit mounting set taking into account article 5.4 guidelines (FIG 36). The Pole should be oriented according to the predefined user behavioral scenario.
- Put the metal round cover back on the Pole and fix it.
- Connect signal cable (UTP cat.5 cable or Ethernet patch-cord that comes as a part of Recognition Unit package) to the Ethernet socket of the Pole (FIG 37).
- Connect Recognition Unit power supply to the 12V power terminals (FIG 38).
- Connect Recognition Unit power supply cord to the 100-220V power terminals (FIG 39).
- Connect Recognition Unit power supply cord to the Recognition Unit's power supply (FIG 40).
- Connect three power cables (phase, null and grounding) to the 100-220V power terminals (FIG 41).
- Connect required wires of the third part equipment (Access control System's controllers, card readers, turnstiles, etc.) to the B3D controller's connectors (for detailed information see article 6.4)
- Insert two plastic covers at the back side one by one (FIG 42).
- Attach 3D Camera to the recognition Unit according to the article 6.2.4.

FIG 33. Removing two plastic covers from the back of the Pole.
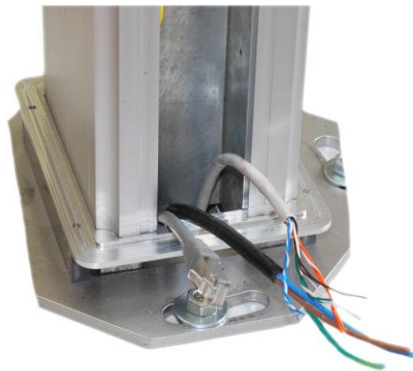

FIG 34. Taking the metal cover off.

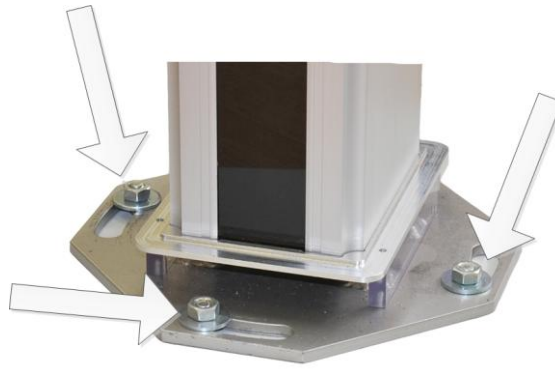FIG 35. Running prepared cables inside the Pole

FIG 36. Mounting the Pole at the floor level.

FIG 37. Connecting signal cable to the Ethernet socket of the Pole.

FIG 38. Connecting Recognition Unit power supply to the 12V power terminals.

FIG 39. Connect Recognition Unit power cord to the power terminals.

FIG 40. Connecting Recognition Unit power cord to the Recognition Unit's power supply.

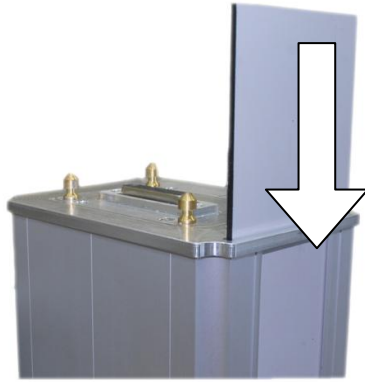FIG 41. Connecting three power cables (phase, null and grounding) to the power terminals.

FIG 42. Inserting plastic covers at the back side.

6.2.2. Electrical Connections

B3D B electrical connections should be performed according to B3D B electrical connection diagram shown on Figure 2.

B3D B electrical connection should be performed in the following sequence:

- Connect B3D B Recognition Unit to Computing Unit using UTP cat.5 cable (or Ethernet patch-cord that comes as a part of Recognition Unit package).
- Connect Computing Unit to LAN with a UTP cat.5 cable.
- Connect Computing Unit to the power line using power cord.
- Connect B3D B Recognition Unit to the power line.

6.2.3. Connection with Access Control Systems

B3D B electrical connections with third part equipment (Access control System's controllers, card readers, turnstiles, etc.) are described in article 6.4.

6.2.4. Recognition Unit assembly

Assembly steps:

- Carefully put 3D Camera on the top of Pole so the five pins on the top of Pole go inside the five fixing holes on the bottom of 3D Camera (FIG 43).
- Slightly press on top of the 3D Camera until the "click" sound is heard (it means that the inner lock has been safely closed)
- Check out that 3D Camera is fixed and cannot be moved up from the Pole.

FIG 43. B3D B Recognition Unit assembly

In case of necessity to disassemble B3D B Recognition Unit, follow instructions below. Please note that Recognition Unit should not be powered on during disassembly.

Disassembly steps:

- Insert small screwdriver (diameter is not more than 1,8 mm) in the round hole on the back of Recognition Unit and slightly press it until the "click" sound is heard that means that the lock is unclosed (FIG 44).
- Carefully lift the 3D Camera up.

FIG 44. 3D camera disassemble.

6.3. B3D BM

B3D BM Recognition Unit package includes 3D Camera, B3D BM Pole and monitor. Recognition Unit should be assembled as follows. Please note that Recognition should not be powered on during assembly.

6.3.1. Pole set up

The B3D BM Recognition Unit is meant to be installed on the floor. There are no special requirements of the floor material, however, it should provide fixture strong enough to avoid Recognition Unit's wobbling, rocking and collapsing. Please note that Recognition Unit should not be powered on during any described procedure.

B3D BM Pole's installation procedure:

- Lift and remove two plastic covers from the back of the Pole (FIG 45)
- Unfasten metal round cover on the bottom of the Pole and take the cover up and off (FIG 46)
- Provide the following cables at the very center of further Recognition Unit's installation place: three power cables (phase, null and grounding, AWG 28-12), one signal cable (UTP cat.5) and necessary number of wires enough to provide connection to the third part equipment according to the predefined user installation scheme.
- Run prepared cables inside the Pole as shown on FIG 47.
- Mount the Pole at the floor level with Recognition Unit mounting set taking into account article 5.4 guidelines (FIG 48). The Pole should be oriented according to the predefined user behavioral scenario.
- Put the metal round cover back on the Pole and fix it.
- Connect signal cable (UTP cat.5 cable or Ethernet patch-cord that comes as a part of Recognition Unit package) to Ethernet socket of the Pole (FIG 49)
- Connect VGA cable inside the Pole to VGA Extender R.
- Fix VGA Extender R using nylon cable ties and special ledges inside the Pole (FIG 50).
- Connect UTP cat.5 cable from Computing Unit's Side to VGA Extender R (FIG 51).
- Connect Recognition Unit power supply to 12V power terminals (FIG 52)
- Connect Recognition Unit power supply cord to Recognition Unit's power supply (FIG 53)
- Connect Recognition Unit power cord to 100-220V power terminals (FIG 54)
- Connect three power cables (phase, null and grounding) to 100-220V power terminals (FIG 55).
- Connect required wires of the third part equipment (Access control System's controllers, card readers, turnstiles, etc.) to the B3D controller's connectors (for detailed information see article 6.4)
- Insert two plastic covers at the back side one by one (FIG 56).
- Attach special metal plate from the B3D BM Recognition Unit set to the monitor bracket with two screws (FIG 57)
- Fix the monitor on the plate using four M4 screws from B3D BM Recognition Unit package (FIG 58)
- Connect power cord and VGA cord to the monitor (FIG 59)
- Attach 3D Camera to the recognition Unit according to the article 6.2.4.

FIG 45. Removing two plastic covers from the back of the Pole.

FIG 46. Taking the metal cover off.

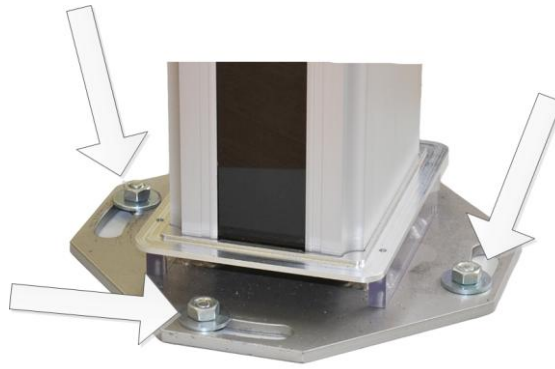FIG 47. Running prepared cables inside the Pole

FIG 48. Mounting the Pole at the floor level.

FIG 49. Connecting signal cable to the Ethernet socket of the Pole.

FIG 50. Fixing VGA Extender R using nylon cable ties and special ledges inside the Pole.

FIG 51. Connecting UTP cat.5 cable from Computing Unit's Side to VGA Extender R

FIG 52. Connecting Recognition Unit power supply to the 12V power terminals.

FIG 53. Connect Recognition Unit power cord to the power terminals.

FIG 54. Connecting Recognition Unit power cord to the Recognition Unit's power supply.

FIG 55. Connecting three power cables (phase, null and grounding) to the power terminals.
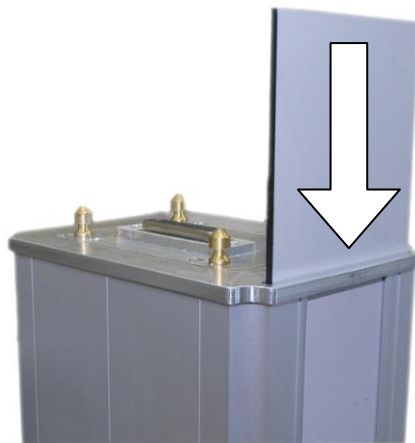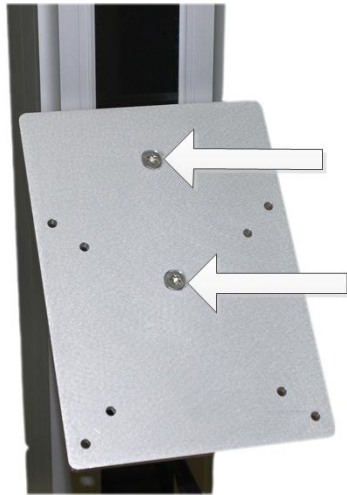

FIG 56. Inserting plastic covers at the back side.

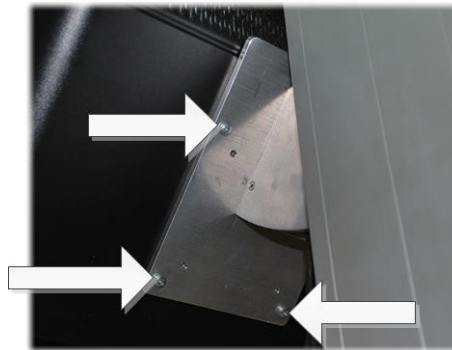FIG 57. Attaching special metal to the monitor bracket with two screws

FIG 58. Fixing the monitor on the plate using four M4 screws.

FIG 59. Connecting power cord and VGA cord to the monitor

6.3.2. Electrical Connections

B3D BM electrical connections should be performed according to B3D BM electrical connection diagram shown on Figure 3.

B3D BM electrical connection should be performed in the following sequence:

- Connect B3D BM Recognition Unit to Computing Unit using UTP cat.5 cable (or Ethernet patch-cord that comes as a part of Recognition Unit package).
- Connect Computing Unit to LAN with a UTP cat.5 cable.

- Connect Computing Unit to the power line using power cord.
- Connect B3D BM Recognition Unit to the power line.

6.3.3. Connection with Access Control Systems

B3D BM electrical connections with third part equipment (Access control System's controllers, card readers, turnstiles, etc.) are described in article 6.4.

6.3.4. Recognition Unit assembly

Assembly steps:

- Carefully put 3D Camera on the top of Pole so the five pins on the top of Pole go inside the five fixing holes on the bottom of 3D Camera (FIG 60).
- Slightly press on top of the 3D Camera until the "click" sound is heard (it means that the inner lock has been safely closed)
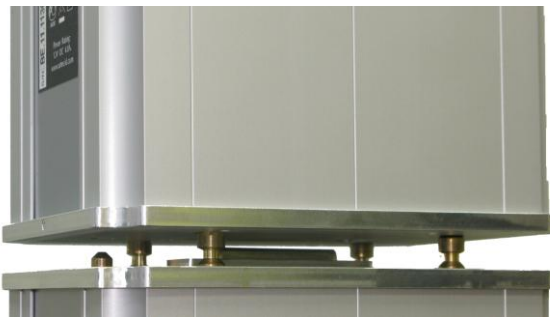- Check out that 3D Camera is fixed and cannot be moved up from the Pole.

FIG 60. B3D B Recognition Unit assembly

In case of necessity to disassemble B3D BM Recognition Unit, follow instructions below. Please note that Recognition Unit should not be powered on during disassembly.

Disassembly steps:

- Insert small screwdriver (diameter is not more than 1,8 mm) in the round hole on the back of Recognition Unit and slightly press it until the "click" sound is heard that means that the lock is unclosed (FIG 61).
- Carefully lift the 3D Camera up.

FIG 61. B3D B Recognition Unit disassembly

6.4. B3D Connection with Access Control Systems

6.4.1. Connecting with an actuator mechanism

The B3D controller can control the actuator mechanism of an ACS (turnstile, gate, barrier, etc.) via a dry contact signal. For this normally open (NO) or normally closed (NC) contacts of Relay 1 of the Connector #1 are used. Parameters of relay:

- Maximum switching voltage DC: 48 V
- Maximum switching current DC: 7 A
- Maximum switching voltage AC: 250 V
- Maximum switching current AC: 10 A

If the actuator device requires a larger current or voltage, then an external relay must be used.

6.4.2. Connecting an external reader

An external reader connects to the B3D controller via Wiegand Interface. The maximum length of cable is 150 m. The cable used must contain several shielded twisted pairs 24 AWG. Conductors for Data0 and Data1 lines must be not twisted.
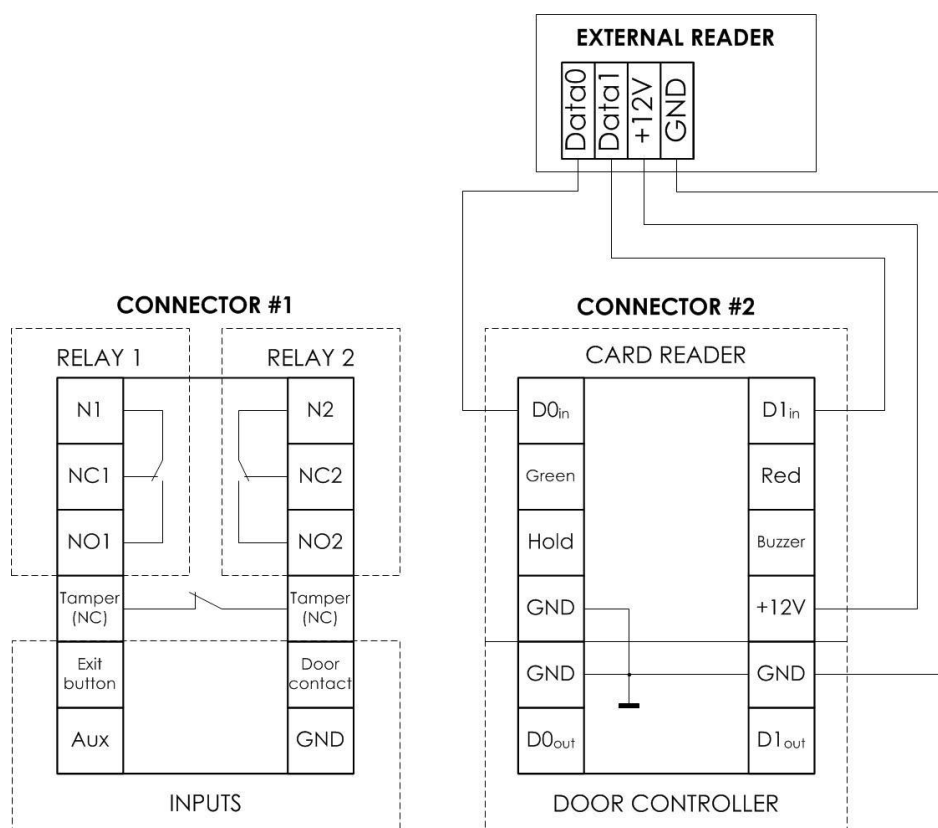

FIG 62. Connection of an external reader

The B3D Controller provides +12 V power to the external reader. The maximum current of power is 300 mA.

If necessary, an external reader can be powered from a separate power source. In that case, grounding of the power sources should be united (FIG 63).
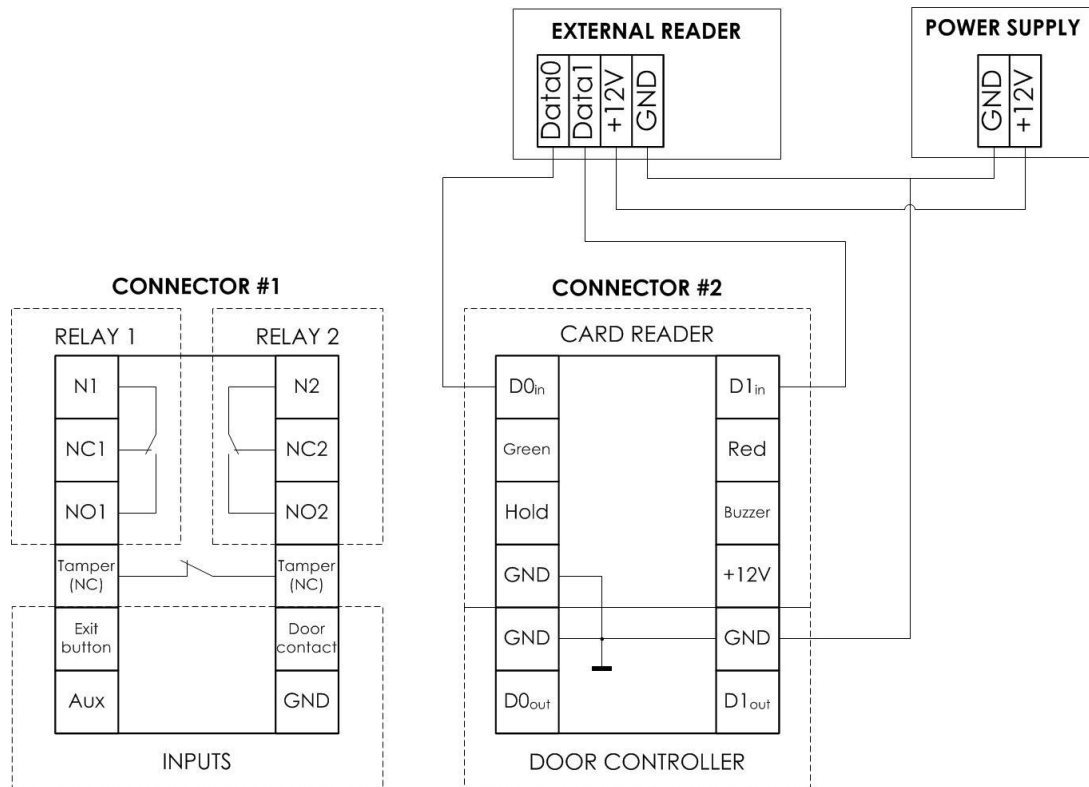
FIG 63. Connection of an external reader with a separate power supply

6.4.3. Connection of an ACS Controller

An ACS controller connects to the B3D controller via Wiegand Interface. The cable used must contain several shielded twisted pairs 24 AWG. Conductors for Data0 and Data1 lines must be not twisted. The grounding of the power sources for the B3D and ACS controllers must be united (FIG 64).
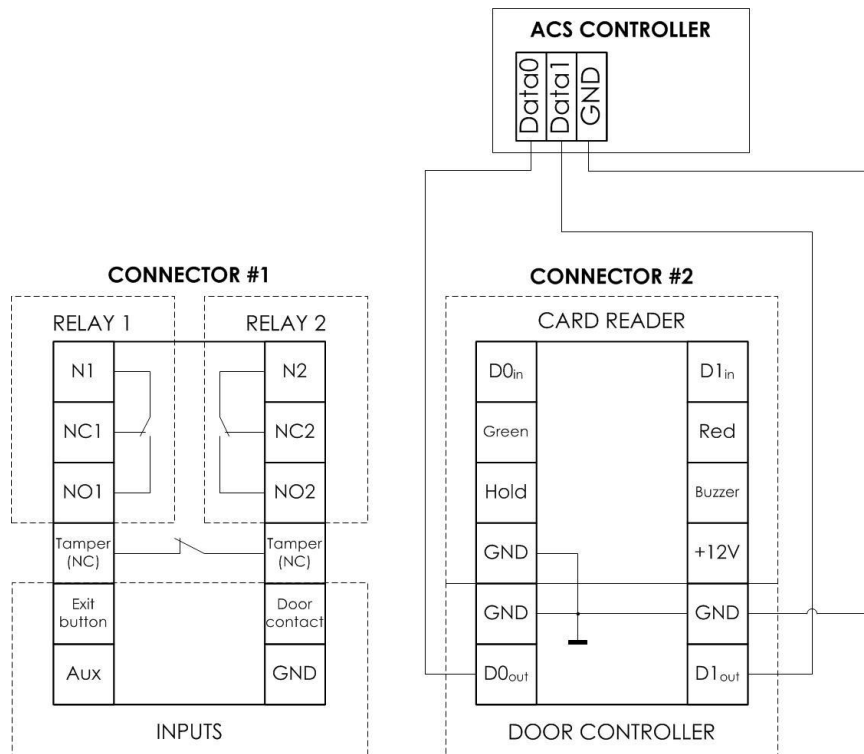

FIG 64. Connection of an ACS Controller

6.4.4. Exit pushbutton connection

Exit pushbutton (EPB) can be connected to the special normally open input of B3D controller (FIG 65). Push of EPB causes switching on the relay of B3D controller for a definite period of time. It provides an additional possibility to control an actuator mechanism.
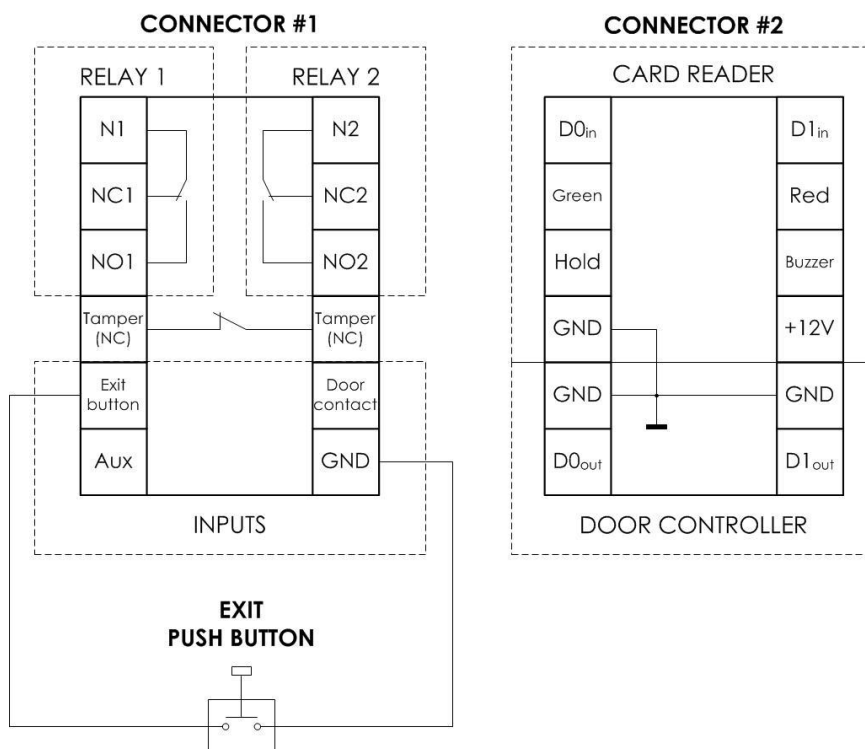
FIG 65. Connection of an exit push button